31 March 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT   : Comments on the Pilot Course on
                       Information Sciences, 2 February - 27 March 1970

1. The attached general comments on the course were
prepared for CIA consumption. More detailed comments have already
been submitted to the Information Sciences Center by all students in
response to two critique formats provided by the Center.

2. The critical comments regarding the Center's Staff and
submitted directly to the Center are as forthright, if not more so,
than the attached. Since Admiral Showers, Chief of Staff, DIA, and
subsequently Dr. Edward Teller and Dr. James Fletcher, DoD
consultants, interviewed students, I am certain the problems
attendant to this pilot course are known to appropriate personnel.
With your concurrence, I shall forward a copy of these comments to   25X1A
PPB, who has requested feedback from the CIA students.

SA/IS/OSP

Attachment: a/s

* Member, Board of Visitors
  other members:
  Adm. Arleigh A. Burke   (USN - Ret.)
  Lt. Gen. Clovis E. Byers (USA - Ret.)
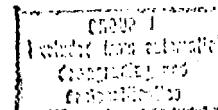 Dr. Edward Katzenbach
  Mr. Lyman B. Kirkpatrick, Jr.
  Dr. Hugh F. McKean

DIST: IPC's
      De/SGS (AT

ATTACHMENT

This course suffered two handicaps from the onset:
(a) confusion on the course objectives, and (b) absence of Staff
planning and rehearsal in executing these objectives. This criticism
is made after taking into account the administrative problems
identified and alluded to by the Staff, and the diversity of the students
in terms of their skills and work situations.

The motivation of the class was initially high, fell off
gradually until the fifth week when it declined precipitously with
the realization the Operations Research instructor could not perform
his assignment. This realization coupled with concern over the best
way to utilize the remaining three weeks, resulted in a "Student
Memorandum" dated 6 March, to the Staff.

I did not sign this petition, principally because I did not
share its concern over "relevancy", because I felt it was not
sufficiently specific, and because I felt under the circumstances
it would serve no useful purpose. In response to a general invitation
by the Center Director, I and six other students addressed a combined
meeting of the Staff and students at which time I expressed specific
views. In addition, along with all students, I submitted two candid,
written critiques based upon formats supplied by the Center Director
and Course Chairman.

The Staff objective appeared to be an attempt to address in
an intelligence community facility a newly evolving inter-disciplinary
field of study, "Information Sciences". To oversimplify, this field
is variously described as encompassing theories and methodologies
concerned with the gathering, processing and utilization of data by
man-machine systems. The rationale behind the course appears
twofold: (a) concern expressed by the PFIAB several years ago over
the data explosion with the intelligence community and increasing
costs attendant thereto, and (b) failure of a program to provide
education for intelligence personnel in "information sciences" by
sending them to courses in the academic community.

I believe the above objective is either vague or unrealistically
ambitious, or both. Further, the rationale may be faulty. To the
extent middle and upper levels of management in the intelligence

community can be educated in operations research to enhance the
objectivity and precision of their thinking, the better equipped
management will be to deal with the problems alluded to by the
PFIAB. No black box or system, of course, is going to solve these
problems. Nor is exposure to information sciences by intelligence
analysts at the GS-12/13 level going to have significant impact. The
degree to which intelligence priorities can be determined and optimum
resource allocation made is a function of politics and enlightened
management at the middle and upper levels.

The pilot course content can be classified into 5 blocks:
(a) mathematics, (b) operations research, (c) information storage
and retrieval systems, (d) computer hardware, and (e) computer
programming. While probably in the bottom 10 percent of the class
in terms of mathematical skills, I feel the statement in the course
literature that no mathematical background is required is misleading.

The prerequisite study package, which (in addition to computer
hardware, computer programming and operations research) allocated
75 hours for self-study in set theory, logic, modern mathematics,
probability theory and statistics was not available until 8 weeks
(including Christmas Holiday) prior to the course. I expended over
150 hours, which was inadequate. Two days were allocated by the
Staff for instruction during the course. This is totally inadequate for
such first-order analytical tools. Either the study package should be
available at least 3 months before the course and two weeks allocated
for instruction during the course, or formal math prerequisites should
be established for the course. Substantial mathematical skill, for
example, is required to grasp a two hour lecture filling three black-
boards of complex equations involving sensitivity analysis of the
distribution of an aerosol.

I would re-designate the Information Sciences Center some
less ambitious title, such as the Analytical Methods Center, and
focus the course on mathematics and operations research. Given an
8-12 week course, I would eliminate the block on information storage
and retrieval systems, and deemphasize the blocks on computer
hardware and programming.

Specialized storage and retrieval systems which by definition
use a relatively controlled vocabulary and whose input is determined
by the user have utility in the intelligence community. I seriously

doubt, however, a general, accross-the-board, all-purpose system makes sense. It is certainly not the solution to the data and information explosions, as implied during the course. There are legions of consultants and specialists in this field; the problem is not how to design such systems, but whether user input is practical. One guest lecturer noted the information explosion is not a problem of volume, but one of increasing complexity of concepts---and as such, not suited for attack by machines.

Computer programming is now being taught at the high school level. Sooner or later, most of us will have to develop this second order skill whether we like it or not. It might be made a prerequisite for this course. In any case, two languages, BASIC and FORTRAN, should not be attempted simultaneously as was done.

Of the six instructors on the Staff (including the Center Director, but excluding its Deputy Director whose duties were administrative), only two engaged in instruction. In addition, the Center Director provided two brief lectures, and at the request of the class, three brief tutorial sessions in mathematics (the hope was for daily sessions).

The Staff should be commended for its excellent effort in arranging guest lecturers. A total of 24 guest speakers gave 33 lectures. Some of these were outstanding, and as a group they were good, albeit in some cases the material was over the head of the students. A parade of guest lecturers, however, does not make a coherent course of instruction. At times the course track was disconcertingly out of phase with the guest lecturers.

The Center Director (GS-16) was on board 15 months before the course began, his Operations Research instructor, 6 months before the course, and the remaining three instructors, 2-3 months. The Staff failed to acquire any case material, either based upon intelligence or business experience. Back-biting and discontent was evident to the students. This situation is a responsibility of the Center Director. The computer hardware and programming instructor, _____ USA, knew his field, was enthusiastic about it, was diligent in his efforts, achieved rapport with the class, and was a very good instructor. Without his efforts, the course would have been a disaster.

25X1A

There was considerable discussion by Staff and students on the question of course relevancy to intelligence and the significance of "information sciences". In my view, most of this was unproductive and resulted from failure by the Staff to meaningfully and initially state the objective of the course. Certainly, the presentations by

25X1A

CIA/OER, and by Dr. Holzman, University of Pittsburg, would have cleared the air if made at the onset of the course. Although including three instructors with experience in intelligence, the Staff appeared singularly isolated from the intelligence community.

I am more convinced than before of the need for an intelligence community school aimed at middle and upper levels of management (whether they include production, collection, finance, etc. and personnel) which provides education in the concepts and methodologies of operations research. While such is not a panacea for the problems confronting the intelligence community, it would constitute a significant step forward.

I have 96 pages of lecture notes, about 100 pages of handouts, an imposing diploma and a class photograph. I have learned a little bit about each block, and have a much better appreciation of what I do not know. The course did develop considerable curiosity in areas where little existed previously.